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ABSTRACT

This is the seventh annual State Board of Education report on Financial Requirements of Public Baccalaureate Institutions and Public Community Colleges in Michigan, and is the first time that capital outlay requirements have been considered in a separate report. The report contains information on capital outlay requirements for 1974-75 and a projection of needs to 1978-79, an outline for facilities planning methodology on the institutional and statewide level, and a review of the major issues relating to institutional size. The primary issue addressed by this report is the need for development of a system to assist the institutions in evaluating their facilities needs, to assist the state agencies and the legislature in determining priorities among institutional requests, and to assess utilization of existing and projected college facilities on a statewide basis. (Author/DB)

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ADVISING ON CAPITAL OUTLAY REQUIREMENTS OF PUBLIC BACCALAUREATE INSTITUTIONS AND PUBLIC COMMUNITY COLLEGES FOR 1974-75

JC 740 456

MICHIGAN DEPARTMENT OF EDUCATION

FOREWORD

This is the seventh annual State Board of Education report on Financial Requirements of Public Baccalaureate Institutions and Public Community Colleges in Michigan, and the first time that capital outlay requirements have been considered in a separate report.

The report contains information on capital outlay requirements for 1974-75, and a projection of needs to 1978-79, an outline for facilities planning methodology on the institutional and statewide level, and a review of the major issues relating to institutional size.

The primary issue addressed by this report is the need for development of a system to assist the institutions in evaluating their facilities needs, to assist the state agencies and the legislature in determining priorities among institutional requests, and to assess utilization of existing and projected college facilities on a state-wide basis.

This document represents a part of the continuing effort of the State Board of Education to provide data and analysis which will enable the State of Michigan to maintain its excellence in the field of higher education. The Executive Office and the Legislature are the primary addressees of the report, but the information should be useful to all who are interested in planning for Michigan higher education.

John W. Porter
Superintendent of Public Instruction

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INTRODUCTION

Two of the primary responsibilities of the State Board of Education, as mandated in the Constitution of the State of Michigan (1963) is that the Board "(1) shall serve as the general planning and coordinating body for all public education, including higher education, and (2) shall advise the Legislature as to the financial requirements in connection therewith."

Pursuant to this constitutional mandate, the State Board of Education initiated the development of a State Plan for Higher Education in Michigan, which it approved on June 11, 1969. Included in the State Plan are goals which call for (a) assistance and encouragement to all public institutions of higher education for the purpose of arriving at optimum utilization of facilities and improved operating efficiency, and (b) annual projections of capital outlay needs.

Major efforts relating to the first of these goals were studies such as An Inventory of Physical Facilities at Institutions of Higher Education in Michigan, Fall 1969 and Provisional Procedures for Reporting, Evaluating, and Projecting Physical Facility Requirements of Public Community Colleges in Michigan, 1970. Much of the methodology utilized in the Procedures was adapted by its author, Dr. Harold L. Dahnke of Michigan State University, to the Higher Education Facilities Planning and Management Manuals published by the Western Interstate Commission for Higher Education and the American Association of Collegiate Registrars and Admissions Officers in 1971.

Activities related to the second goal, that of analysis of annual capital outlay requests, have been undertaken in each of the six prior

years. Capital outlay needs have been included in recommendations on financial requirements made to the Legislature since 1968. This present report is the seventh in the series of Annual Projections of Capital Outlay needs, and is the first time capital needs have been analyzed in a separate report.

PART I

FINANCIAL REQUIREMENTS

In the process of determining the financial requirements of public institutions of higher education for capital outlay, the State Plan for Higher Education in Michigan indicates (pg. 60) that facilities needs of institutions would be determined by increases in Full Time Equated (FTE) enrollment, replacement of facilities, and major remodeling at least once during the lifetime of a building.

In addition to the criteria outlined in the State Plan, analysis of institutional budget requests for capital outlay funding indicates many capital outlay requests originate from the addition of new programs or expanded programs, resulting in the need for specialized facilities. Also, buildings may be requested to complete, or "round out" a comprehensive campus master plan. Thus institutions may have capital outlay needs beyond what would be indicated by either enrollment levels or replacement and remodeling programs.

Five Year Capital Outlay Estimate

Table 1 is a summary of Five Year Capital Outlay Estimates for the public four year and two year institutions, covering the budget request year of 1974-75 through 1978-79.

Public baccalaureate institutions presently have under construction or are projecting construction projects with a total value estimated at $937,291,000. These 13 institutions are requesting funds in the amount of $138,965,000 for the 1974-75 fiscal year. Community college budget requests for capital outlay totaled $24,791,000, for 1974-75, on projects

TABLE I

FIVE YEAR CAPITAL OUTLAY ESTIMATE
($000)

Four-Year Institutions	TOTAL PROJECT COST Gen. Fund	Other	Total	1974-75	1975-76	1976-77	1977-78	1978-79
Central Michigan	$ 33,710	$ 340	$ 34,050	$ 3,855	$ 7,530	$ 5,200	$ 4,000	$ 6,000
Eastern Michigan	22,900	-	22,900	7,795	9,143	8,805	6,760	4,440
Ferris	16,790	-	16,790	4,255	4,760	4,000	2,020	400
Grand Valley	14,895	-	14,895	3,195	5,150	4,700	750	-0-
Lake Superior	18,700	-	18,700	4,125	5,735	2,875	1,500	1,650
Michigan State	82,500	13,900	96,400	12,290	17,910	19,100	11,050	10,050
Michigan Tech.	94,039	3,383	97,422	21,230	22,822	18,905	15,227	14,355
Northern Michigan	37,430	-	37,430	8,028	6,190	9,680	6,190	2,110
Oakland	44,123	-	44,123	3,649	2,160	5,040	6,300	10,200
Saginaw Valley	17,342	175	17,517	2,317	5,100	3,150	2,250	2,100
University of Michigan								
Ann Arbor	111,664	16,500	128,164	20,226	23,100	20,700	17,600	11,200
Health Sciences	26,275	12,500	38,775	5,700	8,975	7,650	3,200	300
Dearborn	34,150	-	34,150	6,550	11,600	7,750	4,300	1,250
Flint	36,275	-	36,275	2,650	10,910	9,290	3,750	3,000
Wayne State	152,450	15,600	168,050	14,700	29,100	27,350	29,650	16,820
Medical Campus	71,800	7,500	79,300	10,550	21,425	27,050	10,675	600
Western Michigan	52,350	-	52,350	7,850	9,050	10,750	8,450	9,250
Sub-Total Four-Year	$867,393	$ 69,898	$937,291	$138,965	$200,660	$191,995	$133,672	$ 93,725

Source: BMB Form HB-11, Five Year Capital Outlay Est'mate, Oct. 1973

TABLE 1 (Continued)

FIVE YEAR CAPITAL OUTLAY ESTIMATE
($000)

Two-Year Institutions	Gen.Fund	Other	Total	1974-75	1975-76	1976-77	1977-78	1978-79
Alpena	$ 3,255	$ 3,255	$ 6,510	$ 180	$ 1,475	$ 1,050	$ 550	$ -0-
Bay de Noc	1,260	1,389	2,649	240	20	278	12	185
C.S. Mott	3,943	4,863	8,806	1,938	1,237	-	-	-
Delta	9,225	9,225	18,450	2,030	1,750	1,925	2,135	1,400
Glen Oaks	280	280	560	25	270	250	10	5
Gogebic	1,646	1,646	3,292	265	500	411	500	275
Grand Rapids	4,193	6,173	10,366	1,113	765	765	1,035	500
Henry Ford	4,200	4,200	8,400	1,000	950	1,050	1,200	-
Highland Park	-	-	-	-	-	-	-	-
Jackson	4,051	8,185	12,236	590	119	-	878	878
Kalamazoo Valley	2,250	4,000	6,250	750	750	750	-	-
Kellogg	1,517	1,517	3,034	23	806	343	345	-
Kirtland	2,873	2,813	5,686	60	1,975	763	75	-
Lake Michigan	4,460	4,460	8,920	360	768	1,517	1,065	750
Lansing	4,220	8,220	12,440	1,593	1,818	-	-	-
Macomb	13,845	25,795	39,640	1,015	2,000	3,000	2,535	2,750
Mid-Michigan	1,330	1,240	2,570	265	245	245	460	100
Montcalm	529	512	1,041	59	470	-	-	-
Monroe	1,907	1,908	3,815	525	525	47	-	-
Muskegon	1,172	1,172	2,344	384	430	800	680	50
North Central	-	2,500	2,500	416	416	416	-	-
Northwestern	1,475	1,475	2,950	400	400	300	175	200
Oakland	1,651	1,651	3,302	1,090	622	678	55	857
St. Clair	2,880	2,850	5,730	1,265	700	150	15	750
Schoolcraft	4,513	4,512	9,025	905	1,035	1,160	828	585
Southwestern	1,406	1,407	2,813	-	608	460	338	-
Washtenaw	12,099	12,099	24,198	5,592	3,696	2,061	-	-
Wayne	22,945	22,945	45,890	2,698	2,638	5,321	5,903	6,385
West Shore	-	1,600	1,600	10	762	378	150	500
Sub-Total Two-Year	$113,125	$141,892	$255,017	$ 24,791	$ 27,750	$ 24,118	$ 18,944	$ 16,170
Total All Institutions	$933,168	$211,790	$1,144,958	$163,756	$228,410	$216,113	$152,616	$109,895

with a total value of $255,017,000. Of this amount, $141,892,000 would be from other than state funds, principally from local sources.

Total capital outlay requests for all public institutions for 1974-75 equalled $163,756,000. For the five-year period covered by the estimate, budget requests equalled $870,790,000.

Distribution of funding requests over the five-year period is shown graphically in Figure 1. One assessment of the institutional requests would indicate that the decline in funding requirements for 1976 through 1979 could be due to the leveling of enrollments, or could be due to incomplete planning information.

Requests for Fiscal Year 1974-75

Information shown in Table 2 provides additional detail for capital outlay requests for the budget year under review. In the budget form, institutions were asked to indicate their needs for new construction and for remodeling and additions. In analysis of the data, an attempt was made to segregate funding for continuing construction already authorized, for a total of $106,709,000; preliminary planning and new construction starts in 1974-75 for $28,751,000; and remodeling and additions to existing structures, $28,296,000. Of the total $163,756,000, approximately 65% was requested by baccalaureate institutions, with the remainder for two-year community colleges.

Requests vs. Appropriations

The State Plan projected, in 1969, a need for $767,250,000 in capital outlay funds for higher education in the five fiscal years 1971-75, or approximately $153,450,000 per year. Of that amount, 69% was to be allocated to baccalaureate institutions. During the same five-year period, Institutional Budget Requests totalled $612,220,000, with 86% of the requests from baccalaureate institutions. In comparison, for the four years for which appropriations

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FIGURE 1
FIVE YEAR CAPITAL OUTLAY
PROJECTION OF FINANCIAL REQUIREMENTS

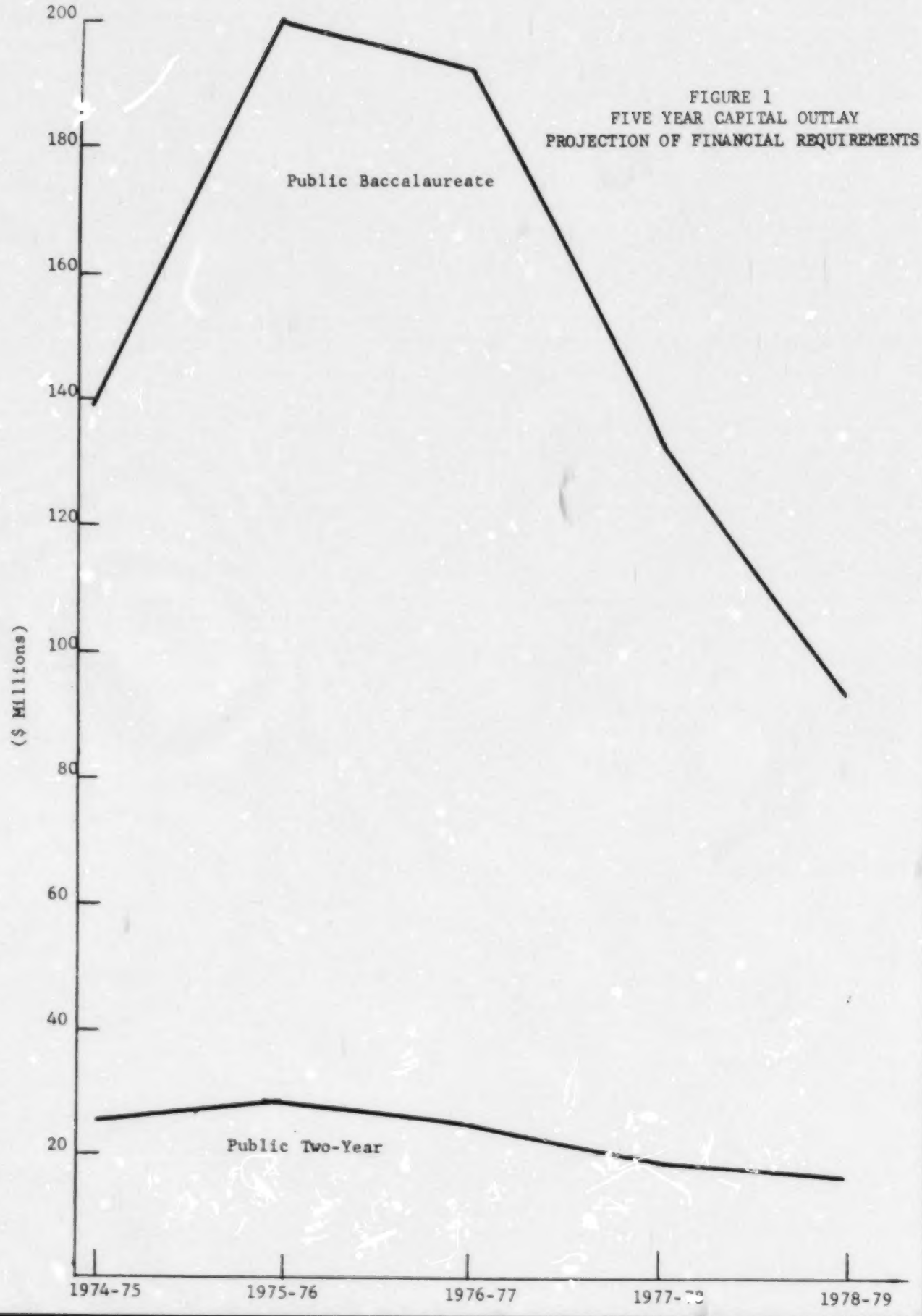

TABLE 2

FIVE YEAR CAPITAL OUTLAY ESTIMATE
($000)

Four-Year Institutions	Request for Continued Construction	Fiscal Year Preliminary Planning	1974-75 Remodeling & Additions
Central Michigan	$ 2,000	$ -	$ 1,855
Eastern Michigan	5,100	975	1,720
Ferris	4,050	90	115
Grand Valley	3,025	50	120
Lake Superior	3,500	-	625
Michigan State	9,500	2,750	40
Michigan Tech.	17,860	1,645	1,725
Northern Michigan	7,818	30	180
Oakland	2,506	150	993
Saginaw Valley	1,200	500	617
University of Michigan			
Ann Arbor	8,826	8,150	3,250
Health Sciences	-	3,400	2,300
Dearborn	6,100	250	200
Flint	-	850	1,800
Wayne State	5,500	3,550	5,650
Medical Campus	10,500	50	-
Western Michigan	4,850	1,600	1,400
Sub-To al Four-Year	$92,335	$24,040	$22,590

Source: BMB Form HB-10, Capital Outlay

TABLE 2 (Continued)

FIVE YEAR CAPITAL OUTLAY ESTIMATE
($000)

Two-Year Institutions	Request for Continued Construction	Fiscal Year Preliminary Planning	1974-75 Remodeling & Additions
Alpena	$ -	$ 100	$ 80
Bay de Noc	235	5	-
C.S. Mott	864	-	1,074
Delta	1,000	1,030	-
Glen Oaks	-	-	25
Gogebic	-	265	-
Grand Rapids	-	675	438
Henry Ford	-	1,000	-
Highland Park	-	-	-
Jackson	-	532	58
Kalamazoo Valley	-	750	-
Kellogg	-	23	-
Kirtland	-	55	5
Lake Michigan	250	75	35
Lansing	1,588	-	5
Macomb	940	15	60
Mid Michigan	-	15	250
Montcalm	-	17	42
Monroe	520	5	-
Muskegon	360	-	24
North Central	416	-	-
Northwestern	-	-	400
Oakland	1,050	40	-
St. Clair	1,250	-	15
Schoolcraft	455	-	450
Southwestern	-	-	-
Washtenaw	5,446	-	146
Wayne	-	99	2,599
West Shore	-	10	-
Sub-Total Two-Year	$ 14,374	$ 4,711	$ 5,706
Total All Institutions	$106,709	$28,751	$28,296

Source: BMB Form HB-10, Capital Outlay

are known, the Legislature has funded approximately 25% of the total requested, a total of $109,930,000. Table 3 shows a year-by-year comparison of Institutional Budget Requests to actual appropriations.

Figure 2 portrays graphically the data shown in Table 4, a thirteen-year history of state appropriations. The highly cyclical nature of the funding pattern as shown, can in part be accounted for by the development and expansion of the institutions during the enrollment explosion of the 1960's and the emergence of the community colleges as a significant factor in higher education in the state.

Summary

In assessing the requests for capital outlay funds, it is recognized that wih an approximate 1.4% enrollment increase at baccalaureate institutions over Fall, 1972, very little of the construction requested can be justified on the basis of enrollment increases. Indeed, review of individual projects indicates many, if not most, are related to site improvement, remodeling and additions, and special purpose facilities.

Community college enrollments, however, have increased nearly 10% during the same one-year period, and a review of project descriptions yields a high proportion of requests for vocational-technical and allied health facilities, reflecting the general shift of student enrollments into occupationally-oriented programs.

In reviewing the history of capital outlay appropriations and expenditures, and in projecting future needs, the very significant impact of inflation on construction costs must also be taken into consideration. The costs of enrivonmental requirements, now a consideration in construction

TABLE 3

COMPARISON OF STATE PLAN, INSTITUTIONAL REQUESTS,
AND ACTUAL APPROPRIATIONS FOR CAPITAL OUTLAY
1970-1971 TO 1974-75
(Dollars in Millions)

Baccalaureate	1969 State Plan	Institutional Budget Requests	Capital Outlay Appropriations
1970-71	$106.06	$ 90.02	$18.66
1971-72	106.06	68.36	7.35
1972-73	106.06	169.63 [1]	20.07
1973-74	106.06	60.75	48.91
1974-75	106.06	138.97	-
Sub-Total	$530.30	$527.73	
Two Year			
1970-71	$ 47.39	$ 20.41	$ 5.28
1971-72	47.39	14.12	1.38
1972-73	47.39	19.44 [1]	1.62
1973-74	47.39	5.73	6.66
1974-75	47.39	24.79	-
Sub-Total	$236.95	$ 84.49	
Total	$767.25	$612.22	

1. Based on 1972 projection

FIGURE 2
APPROPRIATIONS FOR CAPITAL OUTLAY
1961-62 to 1973-74
(GRAPHIC DESCRIPTION OF TABLE 4)

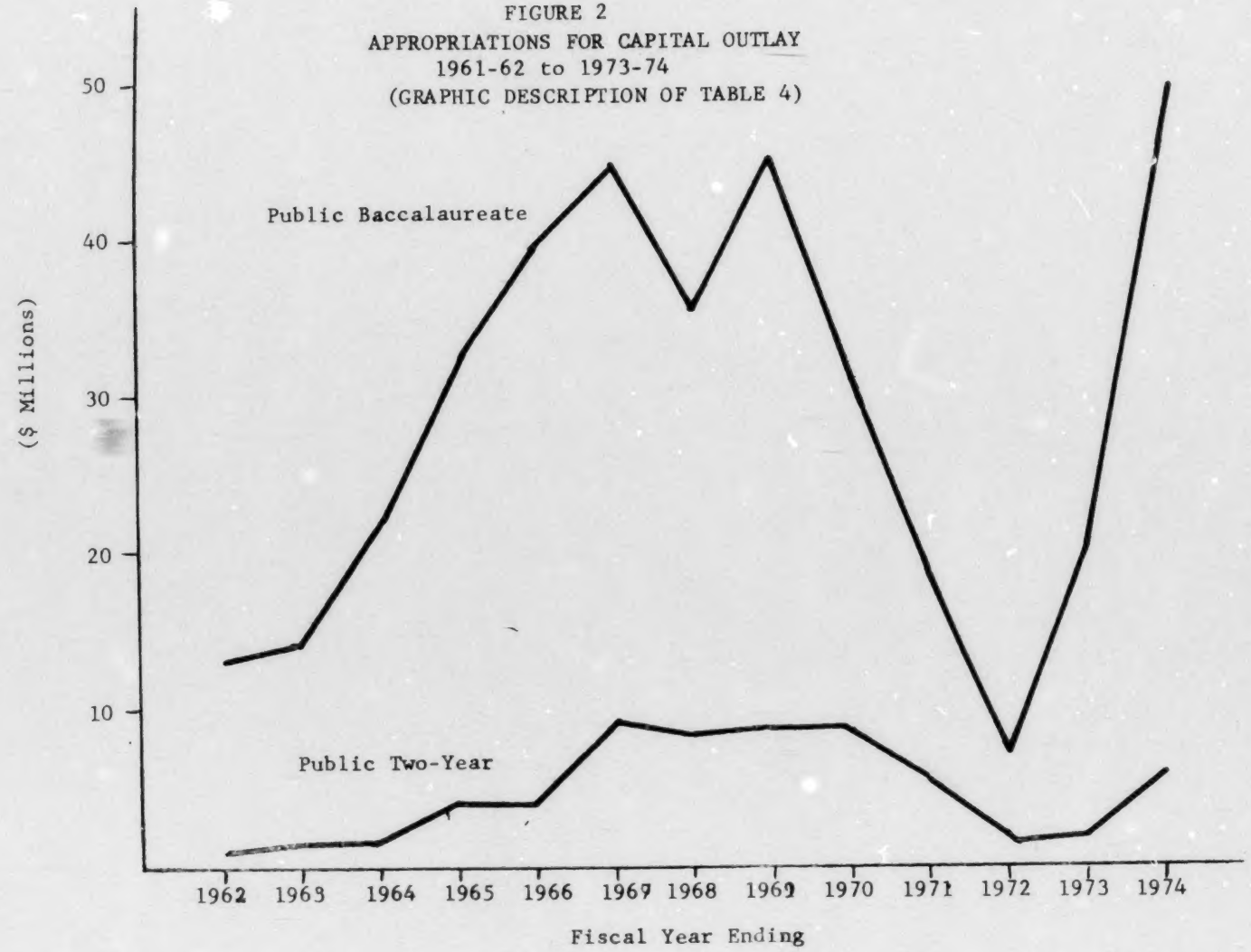

TABLE 4

APPROPRIATIONS FOR CAPITAL OUTLAY
1961-62 TO 1973-74
(Dollars in Millions)

Year	Public Two-Year	Public Four-Year
1961-62	$ 1.00	$ 13.18
1962-63	1.28	14.27
1963-64	1.50	22.02
1964-65	4.00	32.31
1965-66	4.00	39.55
1966-67	9.52	44.85
1967-68	8.14	35.87
1968-69	8.73	45.22
1969-70	8.84	30.96
1970-71	5.28	18.66
1971-72	1.38 [1/]	7.35 [2/]
1972-73	1.62 [3/]	20.07 [4/]
1973-74	6.66 [5/]	48.91 [6/]

Source: Financial Requirements of Public Baccalaureate Institutions and Public Community Colleges, 1971

1. P.A. 127, 1971
2. P.A. 111, P.A. 128, 1971
3. P.A. 217, 1972
4. P.A. 259, 1972
5. P.A. 93, 1973
6. P.A. 90, 1973

projects involving federal funding, have yet to be assessed, even though federal funding for construction is not at present at a significant level compared to several years ago.

The potential future impact of the energy crisis on major construction programs in higher education is yet to be assessed. At a minimum, structural designs may have to be modified in order to conserve fuel for heating and reduce energy requirements for lighting and air conditioning. A major concern, and first consideration, for any new construction may well be the availability of a fuel source for heating. Methodology for projection of facilities needs has not yet attained the level of sophistication which would be desirable, considering amounts of public monies which are involved. A major part of the process remains, realistically, the balancing of available resources to the perceived needs of the institutions, through the legislative process. Through the years, the Budget Division, Department of Management and Budget, has developed and applied standards for space assignment for facilities construction, but it has been difficult to relate facilities requirements to academic programming.

Recommendations

In order to provide a more rational means of allocating public resources to capital outlay projects for higher education, a number of steps should be considered for immediate implementation:

1. A complete facilities inventory should be made, with provision for maintaining the inventory on a current, up-to-date basis, of all institutions of higher education in the state.
2. A means of determining standards of utilization, and criteria of need, should be developed for the evaluation of the physical plant of each institution.

3. Data on utilization should be collected and reported on an annual basis for all institutions, public and private.

4. Any requests for state funds for facilities construction should indicate the relationship between the facilities and the role of the institution, including the requirements for the facility to support an approved or projected academic program.

5. Each institution should have a campus master plan for facilities construction, reviewed and approved by the State Board of Education with supporting rationale in terms of enrollment potential, academic program needs, or for support of instruction.

A number of activities, within the Department of Education and elsewhere, related to implementation of these recommendations are discussed in the next section of this report.

PART II

FACILITIES PLANNINC

Over the past six or seven years, a number of significant activities have occurred in Michigan and elsewhere related to the analysis of facilities requirements of institutions of higher education. Among these are:

1. Collection of facilities data through the Higher Education General Information Survey (HEGIS), now in its seventh annual reporting cycle.

2. Development of An Inventory of Physical Facilities at Institutions of Higher Education in Michigan Fall 1969 utilizing a standardized classification and coding system.

3. Publication of Provisional Procedures for Reporting, Evaluating, and Projecting Physical Facility Requirements of Public Community Colleges in Michigan, 1970.

4. U.S. Office of Education, Higher Education Facilities Classification and Inventory Procedures Manual.

5. WICHE Program Classification Structure.

6. Higher Education Facilities Planning and Management Manual, Western Interstate Commission for Higher Education (WICHE) and the American Association of Collegiate Registrars and Admissions Officers (AACRAO).

The major thrust of these activties has been on the development of institutional level facilities planning capability, and a brief summary of such a system follows.

Institutional Facilities Planning

The section of the WICHE /AACRAO manuals, Program Planning and Analysis: The Basis for Institutional and Systemwise Facilities Planning, provides a methodology for analysis and projection of facilities needs at the institutional level. The structure of this system is outlined below:

Function	Elements
1. Program Planning	a. Projection of instructional loads
	b. Projection of faculty and support staff in academic departments
	c. Projection of support employees in nonacademic departments
	d. Projection of number of students to be served in auxiliary facilities (residential, dining, student health, recreation, etc.)
2. Program Analysis	a. Development of the Induced Course Load Matrix (load placed on academic departments by majors and by students from other departments)
	b. Distribution of Instructional Activities by section size
	c. Inventory of Faculty and Analysis of faculty staffing patterns
	d. Inventory of support staff and analysis of support staffing patterns
	e. Analysis of residential and dining patterns
3. Student Data	a. Current enrollment by major and level
	b. Current course enrollments
	c. Sex
	d. Marital status
	e. Home address (Commuter or resident status)
4. Course Data	a. Organizational unit
	b. Course level
	c. Course credit hours
	d. Weekly contact hours
	e. Classroom section size

Function	Elements
	f. Weekly contact hours of laboratory instruction
	g. Laboratory section size
	h. Course credit hours of "related" instruction (field trips, independent study, thesis, etc.)
5. Facilities Data	a. Organizational unit to which room is assigned
	b. Room type (classroom, lab, etc.)
	c. Function
	d. Area (in assignable square feet)
	e. Number of stations (where appropriate)
6. Staff Data	a. Organizational Unit
	b. Position (job title or academic rank)
	c. Appointment percentage - percent of full-time employment
	d. Requires office space - yes or no
	e. Distribution of activities for faculty members (research, instruction, public service, course assignments)

The primary purpose for including the above in this report is to provide an indication of the scope and detail incorporated in an institutional system of facilities analysis. Of course, all institutions will not utilize every segment of the analysis as presented, and probably very few will consider all elements as outlined above. However, the constraints on resources, statewide emphasis on quantative measures, and the general trend towards educational accountability would seem to indicate application of a higher level of management techniques to insure efficient planning and utilization of physical facilities.

Statewide Facilities Planning

A number of differences are apparent in structuring a system for statewide facilities planning.

1. A more generalized process would be applied at the state or system level. It would be wasteful to attempt to duplicate the degree of detail needed at the institutional level for the purposes of state planning.

2. There must be allowances for individual differences between types of institutions.

3. Data elements must be defined very explicitly, and must be readily obtainable from institutional sources.

4. The process must be explicit regarding what is to be included and what is excluded in the assessment of requirements for various types of space.

5. Procedures must be specified whereby the institutions can provide rationale for exceeding state standards, even though such deviation may not be necessarily approved.

6. Systemwide facilities planning criteria used in the evaluation process cannot be applied to the design of specific facilities.

The general form of the system, as described in the manual, Program Planning and Analysis: The Basis for Institutional and Systemwide Facilities Planning, covers six categories of facilities:

Category	Room Type
1	Classrooms
2	Class Laboratories
3	Non-Class (Research) Laboratories
4	Office and Conference Facilities
5	Study Facilities
6	Special Use, General Use, and Support Facilities

Specifically excluded from these categories are medical care and residential facilities where the extreme variances between institutions and application of programs make the setting of standards an inappropriate planning function.

Planning criteria for analysis and projection of facilities requirements, as suggested in the WICHE/AACRAO manual, are outlined below:

Space Category	Planning Criteria
1. Classrooms	a. Assignable Square Feet per Weekly Student Hour
	b. Assignable Square Feet per Station
	c. Room Utilization Rate (Hours per Week of Room Use)
	d. Station Occupancy Ratio (Percent of Student Stations in Use)
2. Class Laboratory	a. Assignable Square Feet per Weekly Student Hour of Laboratory Instruction
	b. Assignable Square Feet per Station
	c. Room Utilization Rate
	d. Station Occupancy Ratio
3. Research and Graduate Training Facilities	a. Assignable Square Feet per Faculty Member Engaged in Research
	b. Assignable Square Feet per Head-count Graduate Student Engaged in Research
4. Office and Conference Facilities	a. Assignable Square Feet per Full-time Equivalent (FTE) Staff Requiring Office Space
5. Study Facilities	a. Stack Space: Assignable Square Feet per Bound Volume
	b. Study (Seating) Space: Assignable Square Feet per Station
	c. Library Service Processing Space: Percentage of Stack Space plus Study Space
6. Special Use, General Use, and Support Facilities	a. Special Use; Armory, Athletic-Physical Education) Audio/Visual, Clinic (Non-Medical), Demonstration, and Field-Service Facilities
	b. General-Use: Assembly, Exhibition, Food, Student Health, Lounge, Merchandising, and Recreation Facilities

c. Support: Central Food Store, Laundry Facilities, Data Processing and Computer, Storage, and Vehicle Storage

d. Criteria: Percent of Total Space in Categories 1-5.

Basic Data Inputs:

1. Full-Time Equivalent Students
2. Weekly Student Hours of Classroom Instruction
3. Weekly Student Hours of Laboratory Instruction
4. Number of faculty members engaged in research (by department)
5. Number of graduate students engaged in research
6. FTE staff requiring office space (by department)
7. Number of bound volumes in library
8. Number of Library user stations to be provided
9. Facilities inventory data.

In review, the collection and aggregation of the above data on a system-wide or state-wide basis should permit the setting of standards for the various types of facilities requirements. Once the standards have been established, it should be possible to project facilities requirements based upon changes in student enrollments, shifts in enrollments from one program to another, and the overall mission of the institution with respect to emphasis on instruction, research, or public service.

As was indicated in the previous section of this report, it is recognized that it is often necessary to balance institutional needs against available resources, but this process should not replace the need to quantify and test these requirements against a set of objective criteria as outlined above.

Recommendations

Development of methodologies for space analysis and planning for institutions of higher education has received considerable attention on a national scale for the past several years. Leadership for many of these efforts came from Michigan, and pilot projects in this state have demonstrated the feasibility of some of the approaches to facilities analysis. Currently, however, this program is lagging and facilities inventories are not being maintained due to staffing problems within the Department of Education.

1. It is recommended that careful consideration be given to legislative support for the facilities analysis funccion of the Department of Education, in order to continue and expand upon work done earlier.

2. Additional support is required for the development of utilization criteria and the collection, analysis and reporting of utilization data from institutions.

3. Independent institutions of higher education should be included in these reporting systems, in support of the concept of providing for the maximum diversity and freedom of choice for citizens of the state. Some consideration should be given to the financial support of the administrative costs to the independent institutions for providing the required data.

4. Compliance with the statewide facilities inventory and utilization reporting system should be a prerequisite for additional state funding of institutional capital outlay requests.

PART III

INSTITUTIONAL SIZE

In reviewing possible criteria for recommending standards for institutional size, it becomes readily apparent that consideration of institutional roles and objectives, geographic location, relationships to other institutions, and potential for future growth and expansion must all be taken into account.

It is not the purpose of this present analysis to establish any criteria for enrollment maximums for any institution in Michigan. It is within the purview of the institutions, in establishing their individual roles, to determine whether or not a maximum limitation on student enrollment is desirable, or even feasible, in view of the general obligation of state institutions to serve the public need. This is not to say, however, that certain programs, due to cost factors, special faculty or facility requirements, or other considerations should not be limited in enrollments by the institutions. The current literature does not support any conclusions that "bigness" is bad, or that limitations on institutional size, in and of themselves serve any useful purpose.

In careful review of this issue, however, certain considerations regarding institutional size become apparent. These considerations are based upon review of similar studies in other states, general observation of patterns of institutional growth in Michigan, and application of "common sense" standards on a statewide basis.

1. Review of the current enrollments in Michigan public institutions of higher education in comparison to general population distribution indicates that many institutions of considerable size are located apart

from areas of high population density. In view of the present trend away from full-time resident college enrollment, future growth should probably be concentrated on those institutions serving urban areas or existing centers of population.

2. Any future growth of student enrollments should be encouraged first in those institutions having the least requirement for expansion of physical facilities. It might be appropriate to include this criteria in consideration of approvals for establishment of new programs of instruction.

3. Again taking into consideration the distribution of population versus location of institutions, examination should be made of the need for establishment of new institutions of higher education or establishment of branch campuses, in areas presently not adequately served.

4. Particular attention should be given to means of encouraging growth of community college campuses of less than 1,000 FTE student enrollment, in order to provide these institutions with the resources to operate a comprehensive and well-rounded program of instruction. In addition, community college campuses with more than 6,000 FTE day-time students should be encouraged to review their campus capacities to determine the feasibility of establishing another campus to serve its district.

5. It is the responsibility of the colleges and universities to consider methods of organization, decentralization, and other means of counteracting the effects of depersonalization on students as a result of large university campuses.

6. The State should consider additional means of support for the private sector in order to relieve the burden on public higher education to accommodate future growth and shifts in student enrollments.

In view of current projections of student enrollments in higher education for the next ten to fifteen years the problem of size may not be whether to grow, but how to grow. Cluster colleges, living-learning laboratories, experimental colleges, and external degree programs have been established as alternatives to traditional college and university attendance, and further developments of these alternatives can be expected and should be encouraged.

One overriding factor has become apparent, as the institutions shift from a period of unprecedented growth to one of stabilization or retrenchment. It is more critical now than ever before that attention be given to delineation of institutional roles and objectives, so that whatever growth may occur does not degenerate into open competition between institutions for the same population of students, to the disadvantage of the institutions, the students, and the taxpayers.

For the further discussion of optimum sizes for different kinds of institutions, see New Students and New Places: Policies for the Future Growth and Development of American Higher Education, a publication of the Carnegie Commission on Higher Education. See also the comments on optimal institutional size in the report of the Committee for Economic Development, The Management and Financing of Colleges, 1973, pp. 52-53.

Tables 1 and 2 show equated student enrollment for Michigan public baccalaureate and two-year community colleges for the past three years, with a range from 1,640 Fiscal Year Equated Students (FYES) to 40,349 FYES, with an average of 13,188 for the baccalaureate institutions. Community Colleges range from a low of 474 to 9,539, with an average of 2,756 FYES for 1972-73.

TABLE 1

FISCAL-YEAR-EQUATED STUDENTS AT
PUBLIC BACCALAUREATE INSTITUTIONS IN MICHIGAN,
BY INSTITUTION 1970-71 THROUGH 1972-73

	1970-71	1971-72	1972-73
Central	14,676	14,996	14,735
Eastern	18,085	18,396	17,027
Ferris	9,551	9,645	9,537
Grand Valley	3,241	4,041	4,874
Lake Superior	1,403	1,449	1,640
Michigan State	41,253	41,124	40,349
Michigan Tech	5,313	5,426	5,491
Northern	7,723	7,761	7,414
Oakland	6,643	6,981	7,403
Saginaw Valley	1,503	1,658	1,695
U of M-Ann Arbor	36,093	35,516	36,221
U or M-Dearborn	835	1,400	1,837
U of M-Flint	1,573	1,820	2,077
Wayne	28,666	28,942	26,715
Western	22,834	21,867	20,806
Total	199,392	201,022	197,821

Source: Bureau of the Budget, State of Michigan

TABLE 2

FISCAL-YEAR-EQUATED STUDENTS AT
PUBLIC COMMUNITY AND JUNIOR COLLEGES
IN MICHIGAN, BY INSTITUTION 1970-71 THROUGH 1972-73

	1970-71	1971-72	1972-73
Alpena	821	952	1,080
Bay de Noc	675	715	652
Delta	4,438	4,606	4,638
Glen Oaks	606	539	486
Gogebic	575	566	570
Grand Rapids	4,331	4,283	4,011
Henry Ford	5,854	5,269	5,614
Highland Park	2,443	2,598	2,519
Jackson	1,986	2,141	2,268
Kalamazoo Valley	2,016	2,221	2,419
Kellogg	2,105	2,233	2,222
Kirtland	371	425	504
Lake Michigan	1,620	1,832	1,607
Lansing	4,145	4,224	4,711
Macomb	10,007	10,204	9,539
Mid-Michigan	378	416	474
Monroe	1,188	1,189	1,079
Montcalm	504	457	567
Mott	4,757	5,041	5,199
Muskegon	2,557	2,445	2,263
North Central	567	548	576
Northwestern	1,481	1,623	1,627
Oakland	9,807	9,514	8,717
St. Clair	2,058	2,018	1,943
Schoolcraft	3,649	3,705	3,725
Southwestern	816	815	834
Washtenaw	2,275	2,377	2,291
Wayne	4,874	6,027	7,261
West Shore	419	487	538
Total	77,323	79,470	79,934

Source: Bureau of the Budget, State of Michigan

Recommendations

Recognizing the hazards of establishing "standards" for institutional size in Michigan, there remain several recommendations which should receive consideration:

1. The continuing review of facilities utilization should take into account the degree to which institutions are able to respond to the present changes in enrollment mix, from full-time to part-time, day to evening, and general to occupational programs. There should be an assessment of the degree to which areas of high population density are served by conveniently located state institutions.

2. Availability of adequate physical plant may be added to the criteria for approval of new academic programs at public institutions.

3. The ability of a college or community college to support a comprehensive program with less than 1,000 FTE (or FYES) student enrollment should be reviewed, for determination of the need for additional support, in line with the recommendation of the Carneige Commission on Higher Education.

4. The provisions of Act No. 295 of 1969, the Higher Education Facilities Authority Act, should be fully implemented and supported, in order to assist independent colleges and universities in their facilities programs, thus relieving some of the demand for additional facilities in the public sector.

PART IV

CONCLUSIONS AND RECOMMENDATIONS

It becomes apparent, on review of the scope and magnitude of capital outlay requirements of the colleges and universities, that very considerable demands will be placed on public resources for higher education construction over the next five years. The task of setting priorities and determining projects to be funded is one of great complexity and importance to the future growth of the institutions and to higher education in the state of Michigan.

The decisions made with respect to capital construction will have impact on the number of students and the degree to which they can be served by an institution, the programs of instruction which can be undertaken, and the degree of availability of opportunities for postsecondary education for many cicitzens of the state. Actual dollar expenditures for capital outlay are considerable, and even though appropriations for operations may be greater, there is need to bring together every available means of analysis for the optimum distribution of capital outlay funds in order to assure the continued excellence of Michigan institutions of higher education.

What is needed is a further effort to continually update and improve upon the existing inventory of physical facilities of all institutions of higher education. A meaningful system of measuring utilization of facilities, especially classrooms and class laboratories, must be developed. The techniques for facilities planning, outlined in Part II of this report and already utilized to a great extent in the budget analysis process, should be expanded and further refined in application. And finally, a means must be found for the State Board of Education, with its access to data on programs of instruction

and special expertise in this area, to provide input on the educational validity of proposals for physical plant expansion from the institutions.

During the forthcoming several years, with a decline in the rapid rate of growth in student enrollments from that of the 1960's, a potentially severe crisis in energy and fuels, and radical shifts in enrollment of large numbers of students from the liberal arts to applied, vocational, and non-traditional programs of instruction, the need for planning and coordination has never been greater. The tools and techniques for planning exist and are available. The following are recommendations for implementation.

Recommendations

1. The higher education facilities reporting systems, initiated under federal facilities grant funding, should be continued and expanded to include data on facilities utilization. Consideration should be given to implementation of appropriate segments of the WICHE/NCHEMS Facilities Planning procedures outlined in Part II of this report.

2. Future authorizations for facilities construction and capital outlay should be contingent upon compatability of the project with the campus master plan, institutional role statement, and approved programs of instruction.

3. Appropriate staffing to provide ongoing support for the facilities planning and analysis function, outlined in the first two recommendations above, must be made available in view of the termination of federal sources of support.

4. The facilities and capital outlay requirements of the independent colleges and universities must also be taken into consideration, through full implementation of the Higher Education Facilities Authority Act

which provides for loans for facilities and refinancing for independent colleges. Independent colleges and universities, by the same token, must be included in the facilities reporting system, although perhaps not to the same extent as the public institutions.

5. Specific procedures should be developed in conjunction with the Budget Bureau, Department of Management and Budget, to insure that there is opportunity for the Department of Education to provide recommendations on the educational and program implications of institutional budget requests for capital outlay.

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ASSIGNABLE SQUARE FEET BY ORGANIZATIONAL UNIT
IN PUBLIC BACCALAUREATE INSTITUTIONS IN MICHIGAN,
Fall 1972

Institution	I & R Depts. Org. Activity Org. Research Pub. Service	Library	General Administration and Institutional Service	Total Academic Assignable	Auxiliary Services	Non-Institutional Agencies	Unassigned	Total Assignable
Central Michigan University	564,610	130,888	163,848	859,346	1,540,127	--	--	2,399,473
Eastern Michigan University	585,191	95,994	172,527	853,712	1,119,331	932	89,431	2,063,406
Ferris State College	460,802	46,734	100,352	607,888	1,135,528	--	9,033	1,752,449
Grand Valley State College	192,756	41,756	40,176	274,688	129,359	92	21,335	425,474
Lake Superior State College	94,420	27,713	32,784	154,917	173,900	2,028	365	331,210
Michigan State University	3,637,792	301,864	578,215	4,517,871	4,738,658	53,919	40,458	9,350,906
Michigan Technological University	494,790	49,347	72,648	616,785	512,921	3,465	10,034	1,143,205
Northern Michigan University	338,317	83,289	110,405	532,011	771,959	1,590	7,702	1,313,262
Oakland University	411,637	56,304	141,801	609,742	312,689	--	66,977	989,408
Saginaw Valley College	43,380	18,625	19,901	81,906	117,066	1,425	--	200,397
University of Michigan - Ann Arbor	4,020,512	596,028	669,234	5,285,774	6,090,655	14,162	303,549	11,694,140
University of Michigan - Dearborn	137,312	--	47,150	184,462	20,676	--	--	205,138
University of Michigan - Flint	103,754	--	--	103,754	--	--	--	103,754
Wayne State University	1,927,755	294,421	403,912	2,626,088	252,509	23,924	62,638	2,965,159
Western Michigan University	1,136,803	118,942	180,907	1,456,652	1,989,900	--	10,631	3,457,183
Total	14,169,831	1,861,905	2,733,860	18,765,596	18,905,278	101,537	622,153	38,394,564

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ASSIGNABLE SQUARE FEET BY ORGANIZATIONAL UNIT
IN PUBLIC TWO-YEAR COLLEGES IN MICHIGAN,
Fall 1972

Institution	I & R Depts. Org. Activity Org. Research Pub. Service	Library	General Administration and Institutional Service	Total Academic Assignable	Auxiliary Services	Non-Institutional Agencies	Unassigned	Total Assignable
Alpena Community College	78,221	5,494	40,980	124,695	41,530	3,667	--	169,892
Bay de Noc Community College	73,373	4,816	4,640	82,829	15,934	--	5,005	103,768
Delta College	191,400	21,505	32,606	245,511	57,532	1,085	--	304,128
Genesee Community College	250,331	53,000	26,542	329,873	18,822	34,624	21,000	404,319
Glen Oaks Community College	53,598	12,400	4,681	70,879	6,100	--	--	76,979
Gogebic Community College	32,236	6,243	5,892	44,371	--	--	--	44,371
Grand Rapids Junior College	151,602	28,673	18,008	198,283	18,121	829	--	217,233
Henry Ford Community College	176,711	35,351	26,497	238,559	14,533	--	--	253,092
Highland Park Community College	47,816	4,088	9,581	61,485	12,297	--	--	73,782
Jackson Community College	175,384	9,617	22,827	207,828	5,521	--	5,661	219,010
Kalamazoo Valley Community College	260,228	22,667	59,978	342,873	13,893	--	--	356,766
Kellogg Community College	109,097	9,952	14,101	133,150	4,770	1,715	--	139,635
Kirtland Community College	13,080	11,774	11,637	36,491	9,784	--	--	46,275
Lake Michigan College	104,567	26,745	24,540	155,852	12,027	7,793	--	175,672
Lansing Community College	157,128	24,988	48,411	230,527	26,534	875	2,018	259,954
Macomb County Community College - Center	57,293	14,058	14,318	85,669	11,285	--	--	96,954
Macomb County Community College - South	145,990	55,195	40,360	241,545	33,442	181	--	275,168
Mid Michigan Community College	25,401	5,262	3,072	33,935	7,800	--	--	41,735
Monroe County Community College	84,701	13,347	27,313	125,261	1,646	--	--	126,907
Montcalm Community College	48,010	7,353	10,372	65,735	799	--	--	66,534
Muskegon Community College	132,207	18,282	27,950	178,439	16,426	--	900	195,765
North Central Community College	35,560	4,631	5,394	45,585	45,006	2,128	3,604	96,323
Northwestern Michigan College	106,113	13,047	28,477	147,637	64,054	144,741	--	356,432
Oakland Community College - Auburn Heights	99,901	7,081	26,963	133,945	12,528	--	--	146,473
Oakland Community College - Highland Lake	42,599	7,940	26,368	76,907	7,748	--	2,863	87,518
Oakland Community College - Orchard Ridge	121,704	20,236	42,955	184,895	37,281	--	--	222,176
Schoolcraft College	156,673	19,022	43,168	218,863	26,893	--	--	245,756
Southwestern Michigan College	61,864	5,967	6,192	74,023	5,938	--	--	79,961
St. Clair County Community College	108,789	14,755	28,571	152,115	14,625	--	130	166,870
Washtenaw Community College	133,030	--	32,230	165,260	--	--	12,000	177,260
Wayne County Community College	440,802	11,191	9,104	461,097	13,532	--	--	474,629
West Shore Community College	28,510	9,672	23,527	61,709	--	--	--	61,709
Totals	3,703,919	504,452	747,455	4,955,826	556,381	197,638	53,181	5,763,026

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ASSIGNABLE SQUARE FEET BY ORGANIZATIONAL UNIT
IN INDEPENDENT COLLEGES & UNIVERSITIES FALL 1972

Institution	I & R Depts. Org. Activity Org. Research Pub. Service	Library	General Administration and Institutional Service	Total Academic Assignable	Auxiliary Services	Non-Institutional Agencies	Unassigned	Total Assignable
Adrian College	125,276	20,412	49,026	194,714	277,117	--	1,899	473,730
Albion College	152,828	16,828	29,674	199,330	303,270	3,508	10,384	516,492
Alma College	109,257	27,796	36,293	173,351	198,720	7,032	1,950	381,053
Andrews University	144,825	39,719	69,784	254,328	225,998	--	1,195	481,521
Aquinas College	92,108	14,839	11,479	118,426	131,269	1,288	--	250,983
Calvin College	172,294	76,661	16,768	265,723	268,040	--	9,656	543,419
Calvin Theological Seminary	13,542	--	1,196	14,738	4,544	--	--	19,282
Cleary College	15,255	2,575	16,608	34,438	4,477	--	--	38,915
Concordia Lutheran Junior College	44,376	10,386	15,316	70,078	85,708	--	799	156,585
Cranbrook Academy of Art	76,653	3,373	7,810	87,836	51,645	3,159	526	143,166
Davenport College of Business	21,617	2,735	12,827	37,179	58,234	--	--	95,413
Detroit Bible College	10,103	1,521	3,248	14,872	27,339	--	--	42,211
Detroit College of Business	13,638	1,432	6,820	21,890	1,418	--	--	23,308
Detroit College of Law	12,216	9,640	4,470	26,326	--	--	--	26,326
Detroit Institute of Technology	17,246	7,957	16,971	42,174	6,094	--	--	48,268
Duns Scotus College	--	--	--	--	--	--	--	--
General Motors Institute	226,385	12,575	160,014	398,974	126,086	--	--	525,060
Grand Rapids Baptist College	27,386	11,704	6,452	45,542	65,151	--	--	110,693
Grace Bible College	4,460	3,963	2,143	10,566	21,779	--	--	32,345
Hillsdale College	85,921	29,914	26,701	142,536	248,897	--	3,926	395,359
Hope College	144,542	32,756	64,371	241,669	333,618	--	--	575,287
John Wesley College	22,763	3,635	7,389	33,787	40,718	--	4,158	78,663
Kalamazoo College	134,580	37,774	44,343	216,697	207,762	26,049	13,234	460,742
Lawrence Institute of Technology	86,573	10,230	18,317	115,120	9,488	--	--	124,608
Madonna College	91,445	22,074	22,388	135,907	107,702	--	--	243,609
Maryglade College	--	--	--	--	--	--	--	--
Marygrove College	74,674	46,239	41,565	162,478	136,745	14,410	2,080	315,713
Mercy College	69,939	15,192	38,405	123,536	123,967	11,955	--	259,458
Merrill-Palmer Institute	33,194	5,345	16,082	54,621	29,532	--	27	84,180
Michigan Christian Junior College	12,977	2,800	11,931	27,708	50,719	--	--	78,427
Muskegon Business College	9,264	108	2,754	12,126	288	612	978	14,004
Nazareth College	34,824	35,173	26,550	96,547	195,209	--	17,076	308,832
Northwood Institute	38,665	30,252	14,772	83,689	131,905	1,250	19,852	236,696
Olivet College	80,455	14,668	17,698	112,821	120,406	17,198	--	250,425
Reformed Bible College	9,065	1,861	3,103	14,029	14,208	--	--	28,237
Sacred Heart Seminary	19,043	6,011	14,107	39,161	159,157	191	5,042	203,551
Shaw College	20,421	2,540	3,417	26,378	7,068	--	--	33,446
Siena Heights College	91,367	12,251	30,924	134,542	61,093	--	12,050	207,685
Society of Arts & Crafts	27,020	1,188	1,530	29,738	1,260	--	--	30,998
Spring Arbor College	47,260	16,493	7,051	70,804	120,920	--	--	191,724
St. Marys College	11,381	15,287	27,512	54,180	33,798	7,488	24,664	120,130
Suomi College	25,752	6,936	22,424	55,112	41,458	--	--	96,570
University of Detroit	337,505	62,855	99,492	499,852	230,447	5,491	48,570	784,360
Walsh College of Accountancy	2,764	1,276	1,977	6,017	--	--	--	6,017
Western Theological Seminary	5,989	9,721	3,273	18,983	22,436	--	--	41,419
Totals	2,796,848	686,695	1,034,980	4,518,523	4,285,690	99,631	175,066	9,078,910

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